



Assessment of spatiotemporal variability of drought in Weihe River over the period 1960–2010

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The SPI is a valuable tool for quantifying the impacts of drought and comparing the intensity of drought across time and space. In this paper, we examine the spatial and temporal characteristics of droughts in WRB which are showing decreasing trends (becoming drier) over the twentieth century through the SPI series computed on 3-month, 6-month and 12-month time scales. According to the results, moderate drought were the major drought in the WRB, and the main drought periods were detected in 1991–2000, while the extremely dry year was 1995 and 1997 at most of the stations. The annual minimum SPI values for the 3-month and 6-month time scale most frequently occurred during July and October. The trend of SPI-3 showed that the risk of spring and fall drought increased gradually, which will impact on agriculture and water supply. Spatial, the areas with lower mean precipitation values had the largest decrease in SPI, especially in the Northern area. The decreasing trend was detected in the whole basin for SPI-12 and SPI-6. According to the SPI-3, all of the region had a decreasing trend in summer and fall, while winter showed little variation with most of the region had a decreasing trend. Summer showed the most increase throughout the east, with some areas of decrease confined mostly in the north and northwest area. So, there is strong relation between the rainfall distribution and drought potential zones in the basin. The meteorological drought conditions change continuously with seasons depending upon precipitation amount and its spatial distribution.